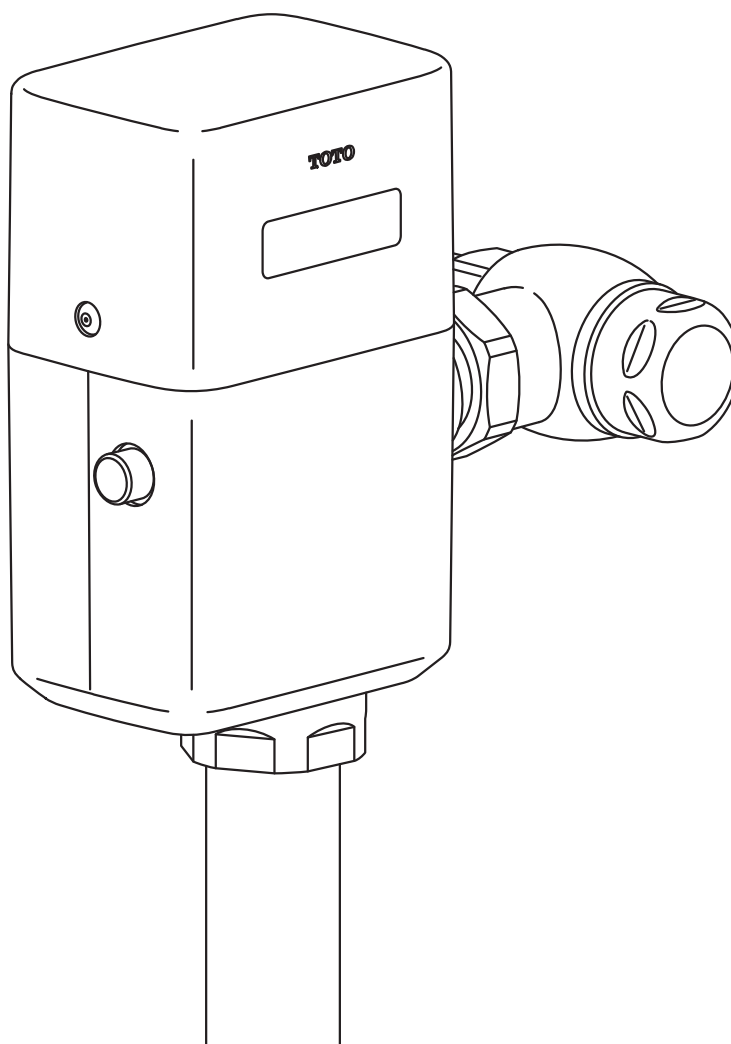


Installation and Owner's Manual
Manual de Instrucciones y del Propietario
Manuel d'Installation et d'Utilisation
Manual de Instalação e do Proprietário

TOTO

EcoPower Flush Valve for Toilet
Válvula de descarga EcoPower para inodoro
Valve de chasse EcoPower pour toilette
Válvula de descarga EcoPower para vaso sanitário



Warranty Registration and Inquiry

For product warranty registration, TOTO U.S.A. Inc. recommends online warranty registration. Please visit our web site <http://www.totousa.com>. If you have questions regarding warranty policy or coverage, please contact TOTO U.S.A. Inc., Customer Service Department, 1155 Southern Road, Morrow, GA 30260 (888) 295-8134 or (678) 466-1300 when calling from outside of U.S.A.

TABLE OF CONTENTS

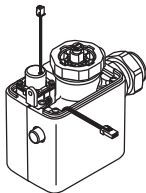
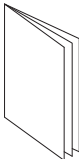
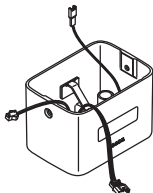
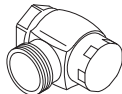
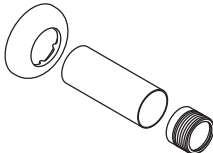
Thanks for Choosing TOTO!	2
Included Parts	2
Common Tools Needed	3
Initializing the Ecopower product.....	3
Features	3
Specifications	4
Technical Information	5
Warnings	5
Before Installation.....	6
Installation Procedure.....	7
Test Run.....	10
Note to the Installer	10
Periodic Maintenance	10
Care & Cleaning	10
Using the Flush Valve	11
Troubleshooting.....	12
Warranty	17
Rough-In Dimensions	66
Reclaimed Water Specifications.....	67

THANKS FOR CHOOSING TOTO!

The mission of TOTO is to provide the world with healthy, hygienic and more comfortable lifestyles. We design every product with the balance of form and function as a guiding principle. Congratulations on your choice.

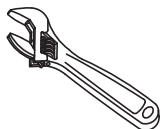
INCLUDED PARTS

Check to make sure you have all these parts from the package*:

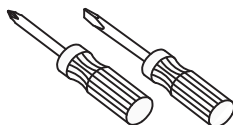
				
Valve body assembly	Back-up Battery Pack	Screws	Hex wrench	Installation and Owner's Manual
	For TET1UB(X)32, TET1LB(X)32, TET6LB32, TET1GB32, TET6GB32, TET6UB32			
Top cover assembly				
	Vacuum breaker tube (with spud joint)	Control stop	Sweat solder kit (Escutcheon, covering tube, Adapter)	
Flush valve Notice label				

*Appearance of some components may vary depending on the model.

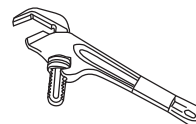
COMMON TOOLS NEEDED



Adjustable wrench



Screwdrivers (Phillips and Flat head)



Offset pipe wrench

INITIALIZING THE ECOPOWER PRODUCT

Thank you for choosing the latest innovation in low power consumption EcoPower products. Please note below the duration of time required to initialize the electronics.

It will take approximately 5 minutes after connecting the battery for the electronics to initialize.

This delay is a normal part of startup.

After approximately 30 seconds, the sensor LED will start flashing in 4 second intervals until the initialization is complete.

FEATURES

Fully Automatic and Hygienic

The EcoPower Flush Valve uses an infrared sensor to detect the user using and departing the fixture, to provide an automatic flush of the fixture after 3 seconds. No manual operation is required, improving the experience of use and hygiene of the fixture.

Courtesy Flush

When the fixture is not used for 24 hours the protection timer commands the system to flush in order to maintain the trap seal.

Manual Functionality

For maintenance and emergency use, the EcoPower Flush Valve is equipped with a manual flushing button.

Green Features

Conserves Power

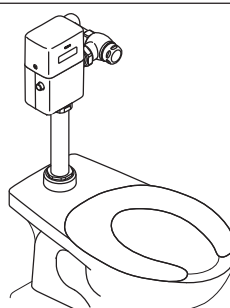
The flushing of the fixture activates a hydropower generator which generates electric power for the next flush. (See About TOTO's Hydropower Generator, page 5)

Conserves Water

The EcoPower Flush Valve offers consecutive flush prevention to save water. After a flush, the valve will not automatically flush again for 30 seconds.

TOTO EcoPower Flush Valve are designed to work for 10 years, under normal conditions, with no minimum daily usage required.

SPECIFICATIONS

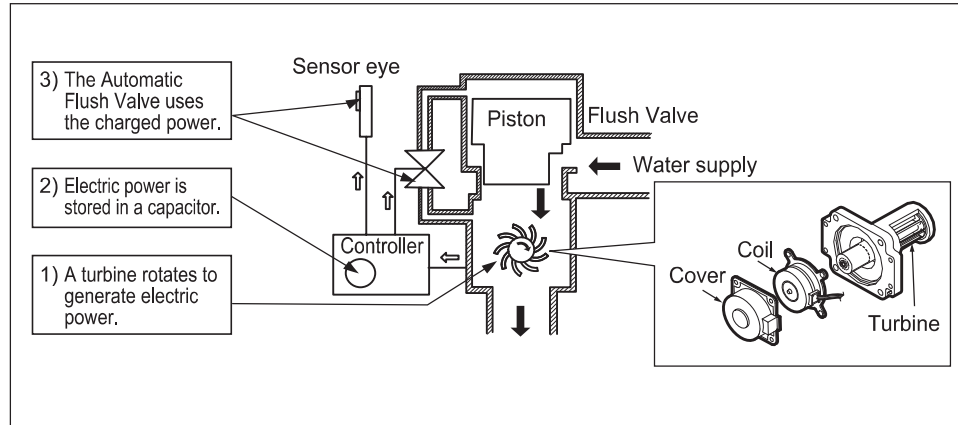
SPECIFICATIONS				
Figure		Toilet		
				
Model Number		TET1GB TET6GB	TET1LB TET1LBX TET6LB	TET1UB TET1UBX TET6UB
Rated Flush Volume		1.6 G (6 L)	1.28 G (4.8 L)	1 G (3.8 L)
Toilet		Flush Valve type bowl		
Control stop inlet		1" NPT		
Flush Valve inlet		1-1/4" NPSM		
Flush Valve outlet		1-1/2" NPSM		
Supply water pressure	Min (Flowing)	15 psi (103 kPa)	25 psi (173 kPa)	
	Max* (Static)	125 psi (862 kPa)	125 psi (862 kPa)	
Shutoff pressure		7 psi (48 kPa)		
Dimension of cover		7-1/4" (H) x 4-9/16" (W) x 3-3/16" (D) < 185 mm (H) x 116 mm (W) x 82 mm (D) >		
Detection range from the front		Within 39-3/8" (1000 mm)		
Detection time		6 seconds		
Delayed flush		3 seconds		
Trap seal protection		Automatic flush every 24 hours of non-use		
Ambient temperature		32-104 °F (0-40 °C)		
Water temperature		34-104 °F (1-40 °C)		
NOTE: The type of fixture determines the minimum pressure required for the valve. Consult fixture manufacturer for the pressure requirement. TET6LB, TET6GB and TET6UB require 24" OR LONGER vacuum breakers. The valve will not have the proper detection range if you use a shorter vacuum breaker.				
* Water pressures over 80 psi are not recommended for most plumbing fixtures.				

TECHNICAL INFORMATION

About TOTO's Hydropowered Generator

The flow of water causes the turbine in the power generator to rotate. This process generates electric power and enables the automatic Flush Valve to operate. See ill. 1 below.

TET1GB
TET6GB
TET1LB(X)
TET6LB
TET6UB
TET1UB(X)



ill. 1 Hydropowered Generator

WARNINGS

Please read and adhere to these notes. Failure to do so could result in personal injury and/or property damage.

- Never splash water on the controller. The EcoPower Flush Valve is an electric appliance. Risk of product malfunction.
- Do not strike or kick the EcoPower Flush Valve. Risk of product malfunction or water leakage.
- Do not use the EcoPower Flush Valve at temperatures exceeding what local codes or product specification allow. Risk of product malfunction.
- Do not place an item in a room with high humidity such as shower area or sauna. Risk of product malfunction.
- Never attempt to disassemble, reassemble, repair or modify the EcoPower Flush Valve unless you are a professional. Risk of product malfunction and electric shock.
- Do not use standard vacuum breaker or control stop with reclaimed water flush valve.
- Do not use petroleum based products or pipe sealants, doing so could damage product and cause water damage.
- Use appropriate protective equipment such as gloves during installation or maintenance.
- Do not neglect Periodic Maintenance. Refer to the Periodic Maintenance section of the instruction manual.

BEFORE INSTALLATION

IMPORTANT: Plumbing installation must be in accordance with applicable codes and regulations. Water supply lines must be sized to provide an adequate volume of water for each fixture. Flush all waterlines prior to operation.

- Toilet and urinal Flush Valves are not interchangeable, check the model number on the label to make sure you have the correct type. Toilet Flush Valve model numbers begin with 'TET' and Urinal Flush Valve model numbers begin with 'TEU'.

- Prior to installing your Flush Valve, install the items listed below:

Toilet bowl fixture

Drain line

Water supply line

The supply piping to these devices must be securely anchored to the building structure to prevent the installed device moving during use. Prevent marring to the exposed surface during installation.

IMPORTANT: Purge all air from the supply lines before connecting flush valve to the bowl. Trapped air in supply lines may crack the china.

Except for TET6GB, TET6UB and TET6LB, install the Flush Valve so the control stop is no less than 11-1/8" (282 mm) above the top of the bowl. For TET6GB, TET6UB and TET6LB, install the Flush Valve such the control stop is 27" (685.8 mm) above the bowl. see local codes for special requirements.

- Avoid damaging the surface of the infrared sensor while unpacking.
- The toilet Flush Valve may not function if toilet seat or lid cover are left upright and block the sensor.
- For Reclaimed Water Flush Valve:
Only use reclaimed water angle stop and vacuum breaker.
- The detection range of the infrared sensor is shown on p.16.
- To prevent valve malfunction, do not install a handrail or any other object within the detection range of the sensor. Do not install the Flush Valve where sensor faces a mirror, stainless steel wall, other highly reflective surfaces or another infrared sensor.

INSTALLATION PROCEDURE

NOTE: For retrofit installation, remove the old Flush Valve after shutting off the control stop.

NOTE: For reclaimed water, do not use standard vacuum breaker or control stop.

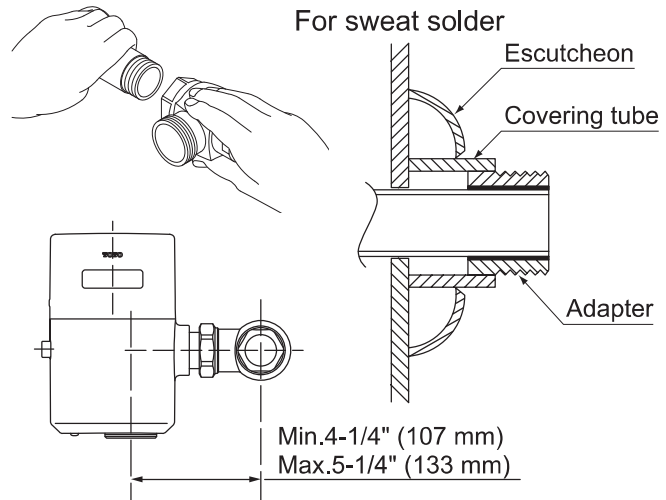
NOTE: Do not use petroleum based products or pipe sealants.



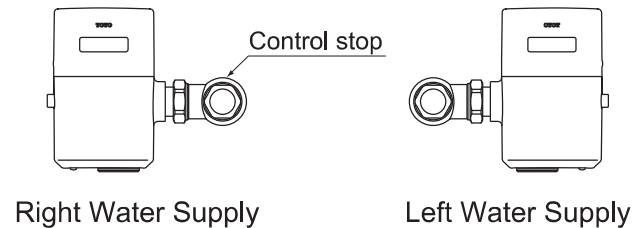
1. Install the control stop using an appropriate size escutcheon and a sweat solder adapter kit, if applicable.

Thread sealing compounds should be used on male NPT threads only.

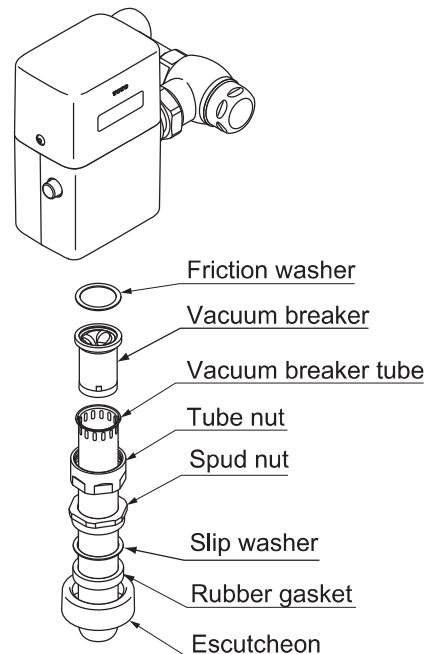
The distance from center of the control stop to center of the toilet should fall within 4-1/4" to 5-1/4" (107 mm to 133 mm).



For use with a left water supply, attach the sensor top cover in the opposite direction so that the sensor will be at the front.



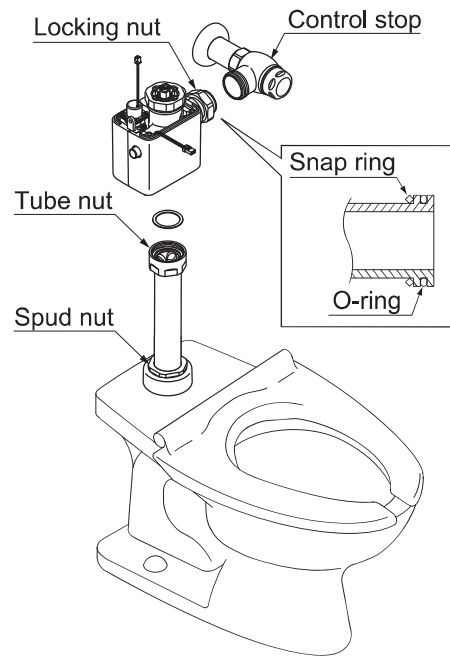
2. Determine the length of vacuum breaker tube to join the Flush Valve and fixture spud. If required, cut the vacuum breaker tube to the proper length.
3. Assemble the spud nut assembly to the fixture spud. Hand tighten spud nut to fixture.



INSTALLATION PROCEDURE

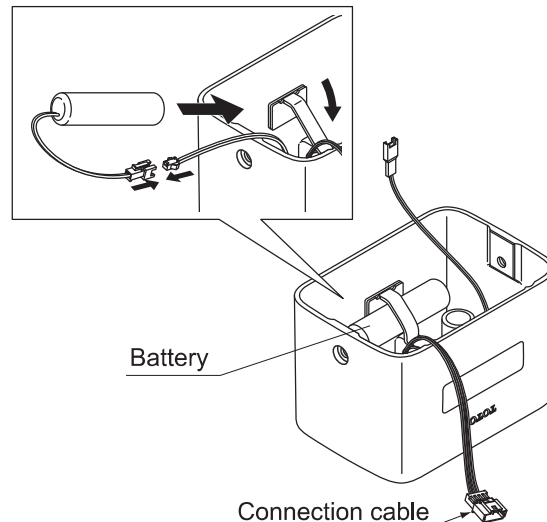
ENGLISH

4. Prior to inserting the Flush Valve tailpiece into the control stop, make sure that the o-ring is in the groove at the end of the tailpiece, the locking nut and the snap ring are located as shown.
5. Connect the Flush Valve with the control stop and the vacuum breaker tube. Exercise care not to damage the o-ring when inserting the tailpiece into the control stop. If lubrication is needed, wetting the o-ring with water is sufficient.
6. Align the Flush Valve and securely tighten fixture spud nut, vacuum breaker tube nut and locking nut with a wrench.

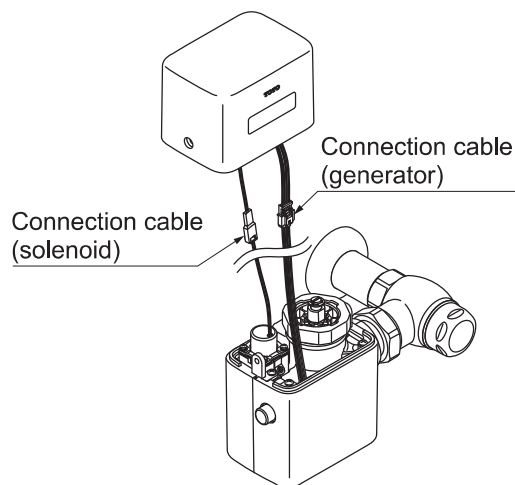


7. Connect the battery cable with that of the controller and set the battery at the proper position.

NOTE: It will take 5 minutes after connecting the battery for the electronics to initialize.
After approximately 30 seconds, the sensor LED will flash in 4 second intervals until the initialization completes.

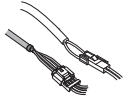


8. Connect the cables of the solenoid valve and generator with those of controller.

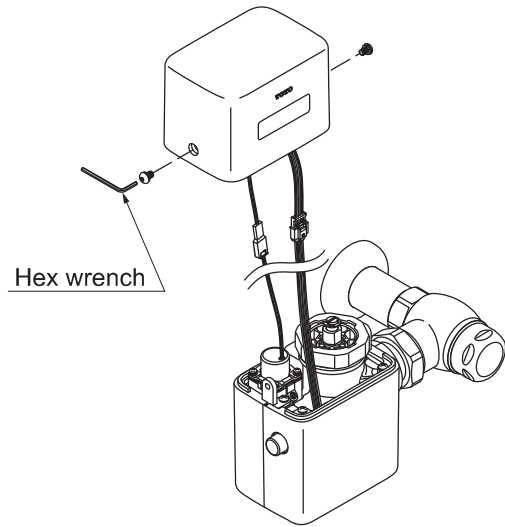


INSTALLATION PROCEDURE

9. Fasten the sensor top cover to body assembly with the supplied screws and hex wrench.

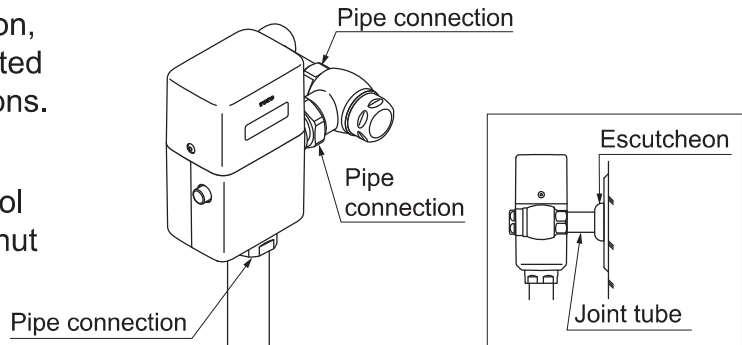


Protect the wire connections inside the top cover.



10. Before the supply water is turned on, be sure all water leaks are eliminated by tightening all the pipe connections.

NOTE: If for any reason it becomes necessary to remove the control stop, make sure the water is shut off at the main supply valve.



The Flush Valves are preset for fixture volume as marked on the valve carton. The valve does not require adjustment for variation in water pressure within its operating range.

11. To set the Flush Valve for proper operation, open the control stop completely by using the adjusting screw.

12. Activate the Flush Valve several times.

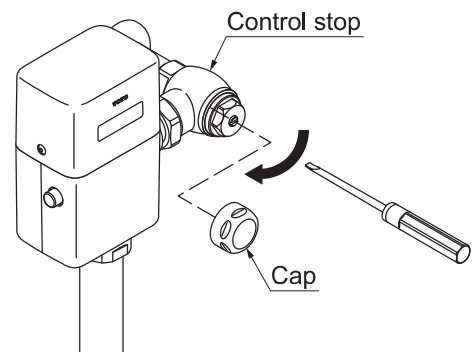
13. In the case of excessive flow rate, gradually adjust the control stop towards the closed position using the adjusting screw, until there is suitable water flow into the fixture.

NOTE: Adjust so water amount is not excessive and waste can flow properly.

14. The cap for the control stop should be placed after final adjustments have been made.

15. Tighten the cap firmly with a wrench.

WARNING: Do not open the control stop to the point where the flow from the Flush Valve exceeds the flow capability of the fixture. In case of a valve failure, the water must not overflow from the fixture.



TEST RUN

After connecting the battery, the initialization process takes 5 minutes. After approximately 30 seconds, the sensor LED will start flashing in 4 second intervals until the initialization is complete. Please wait before starting the Test Run.

1. **For Toilet:** Sit on the toilet seat.
2. Stay there for 6 seconds or more and then leave the toilet seat. The valve should automatically flush after 3 seconds.
3. Press the manual flushing button for 2 seconds and make sure the valve flushes properly and the red light of the sensor is on.
4. Recheck all the pipe connections for water leaks. If the Flush Valve does not operate properly, refer to the Troubleshooting section on p.12.

NOTE TO THE INSTALLER

After the Flush Valve unit has been installed correctly, please explain to your customer how to use it and tell them to observe the following instructions:

1. Do not put any object in front of the sensor window which could obstruct the sensor, causing it to malfunction.
2. In case of any trouble, consult the troubleshooting section on p.12. If you lack the necessary skills required or have difficulty following the directions for installation, maintenance, repairs, troubleshooting or adjustments of the product, do not proceed without assistance from a qualified person.

PERIODIC MAINTENANCE

Please check your EcoPower Flush Valve at least once a month according to the following instructions to avoid risk of property damage.

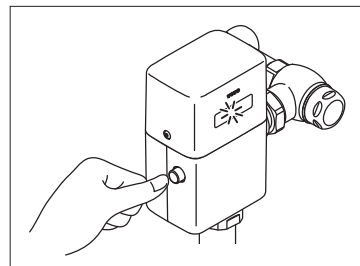
Check the piping to see if there is any leakage or loose connection.

Press the manual flushing button and make sure the sensor red light is on for 2 seconds to see if the generator performs properly or not.

If the red light is not on, check the generator to see if any debris is clogged up at the turbine.

Inspect the VB duckbill at least twice a year.

Over time, the vacuum breaker duckbill may begin to break down. If the duckbill is worn, stiff, or leaking, replace it.



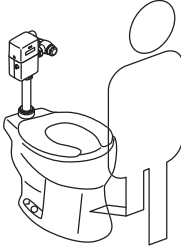
CARE & CLEANING

IMPORTANT! Do not scratch the sensor or faceplate when cleaning.

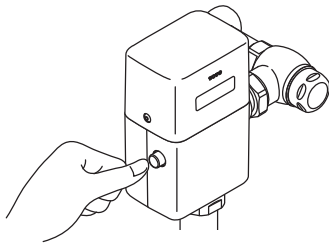
- Avoid using any cleaning materials that may scratch the surface.
- Never use polishing powder, detergent that includes coarse particles, thinners, benzene, acids, alkaline detergents, or nylon scrub brushes.
- To safely clean the surface, wipe it using a soft cloth dampened with diluted dishwashing detergent and dry it with another soft cloth. If this does not adequately clean the surface, wipe the area with a neutral detergent and wet cloth.

USING THE FLUSH VALVE

ENGLISH

Infrared Sensor	Flushing	Flushing Every 24 hours
 The infrared sensor detects a user of the toilet.	 When the user stays in place longer than 6 seconds then moves away, the controller sends a signal to the operating unit to automatically trigger the Flush Valve after 3 seconds delay.	 If toilet is not used for 24 hrs, the protection timer commands the system to flush in order to maintain the trap seal.

Manual Flushing Button



Use the manual flush button for maintenance or emergencies.

TROUBLESHOOTING

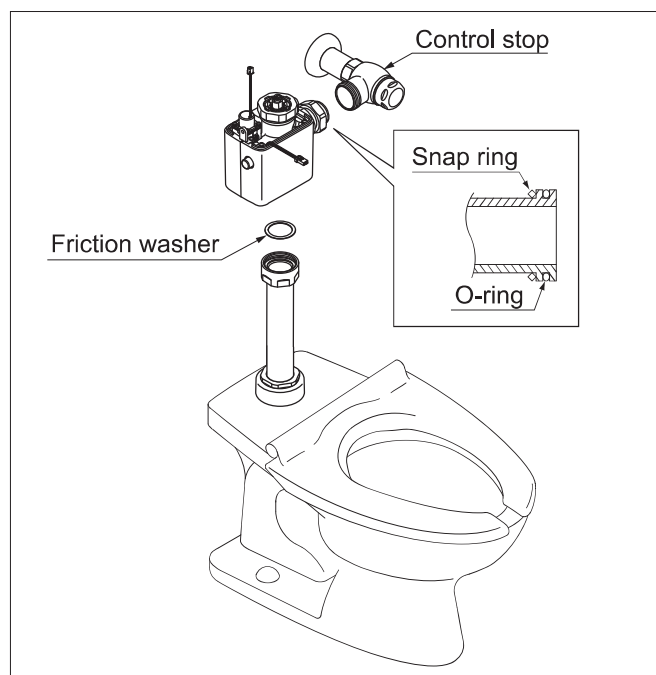
Problem	Possible Cause	Suggested Action	Ref. Page
No water comes from the Flush Valve	The main valve in water supply line or the control stop is shut off	Open the main valve or the control stop	-
	One or more cables not connected	Check all cable connections	-
	The surface of the glass in front of the infrared sensor is dirty	Clean the surface of the glass	-
	The glass is broken	Contact distributor for replacement	-
	There is a reflective surface in front of the sensor	Remove the reflective surface in front of sensor	16
	The infrared sensor or the solenoid is out of order	Contact distributor for replacement	-
	The small holes in the solenoid diaphragm are clogged	Clean the small hole in the diaphragm and filter	15
	Hydropower generator is clogged	Service hydropower generator	-
Water does not stop flowing	The small hole in the piston is clogged	Clean the small hole in the piston	14
	The sealing area of the piston is dirty	Clean the sealing area of the piston	14
	The sealing area of the solenoid diaphragm is dirty	Clean the sealing area of the diaphragm and filter	15
	Piston u-packing is damaged	Inspect & replace if necessary	14
The discharge volume is too small	The screw of the control stop is not adjusted properly	Adjust the discharge quantity by the screw of the control stop	15
The discharge volume is too much			
The flow rate is too low	Water supply pressure is too low (below rated minimum pressure)	Consult with a plumbing contractor	-
	The control stop is not open enough	Adjust the control stop properly	15
The flow rate is too high	The control stop is not adjusted properly	Adjust the control stop properly	15
A red light in the sensor window blinks	The battery is weak	Check voltage with multimeter, if below 2.6 V, contact TOTO for replacement battery	15

NOTE: Do not dismantle parts of the Flush Valve which are not specified in the troubleshooting guide.
If you need further assistance, please call TOTO Tech Services at (888) 295-8134.

■ DISASSEMBLY

If the whole valve needs to be removed from the water supply for servicing, please be aware of the cautions below:

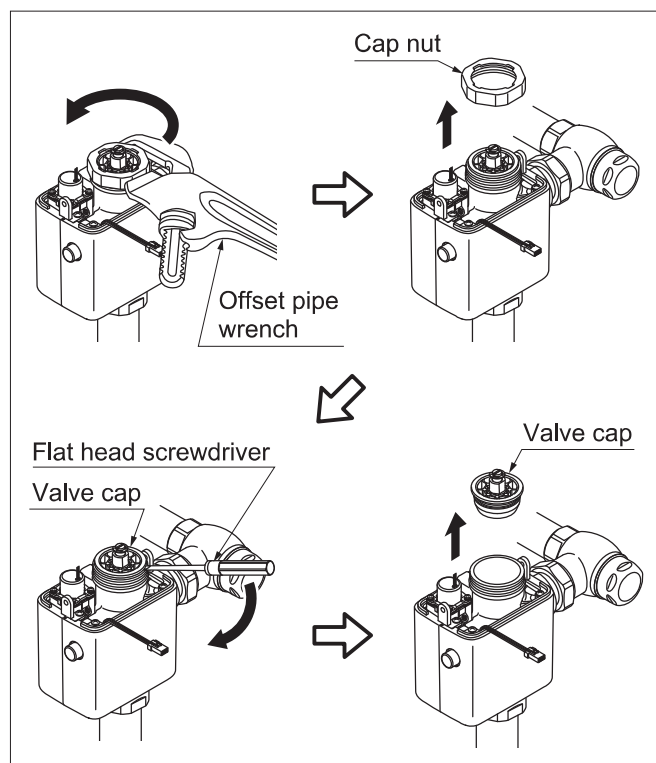
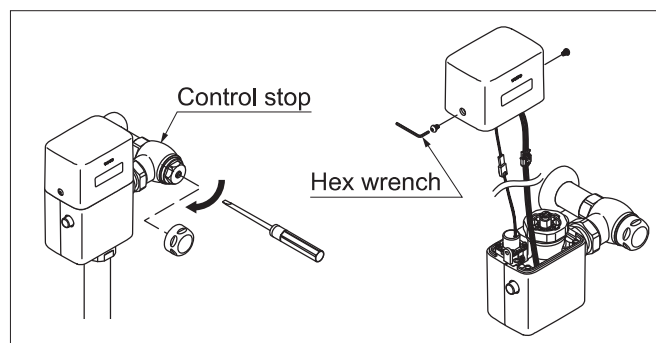
1. Be careful not to lose or tear the friction washer at the outlet connection to the vacuum breaker tube nut. To maintain a proper seal, replace the washer if necessary.
2. When re-installing the valve to the water supply, avoid pinching the o-ring.



■ CLEANING PISTON ASSEMBLY

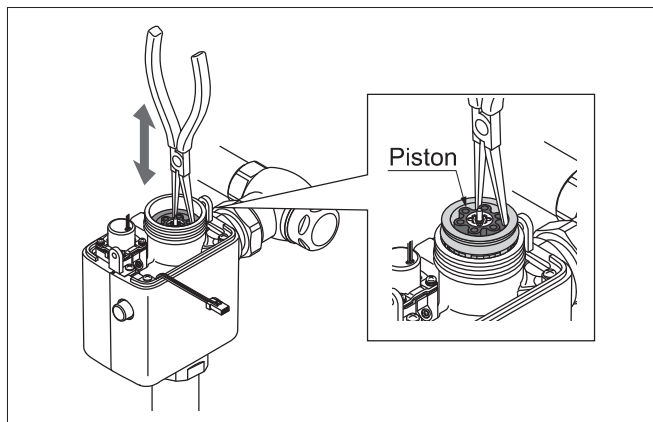
1. Turn the screw of the control stop clockwise to turn off the water.
2. Remove the side screws from top cover using the tamper resistant hex wrench (provided).
3. Lift off top cover carefully, and disconnect the harnesses of the solenoid and generator.
4. Remove the cap nut using a offset pipe wrench.
5. Remove the valve cap using a flat head screwdriver.

NOTE: Be careful not to damage the solenoid valve or harness when attaching or detaching the cap nut or valve cap.



6. Take out the piston assembly.

NOTE: If you have trouble gripping the piston assembly, use the needle nose pliers as shown in the illustration.



7. Check the small hole in the piston to see if it is clogged with debris. Insert a small wire to unclog hole if needed.

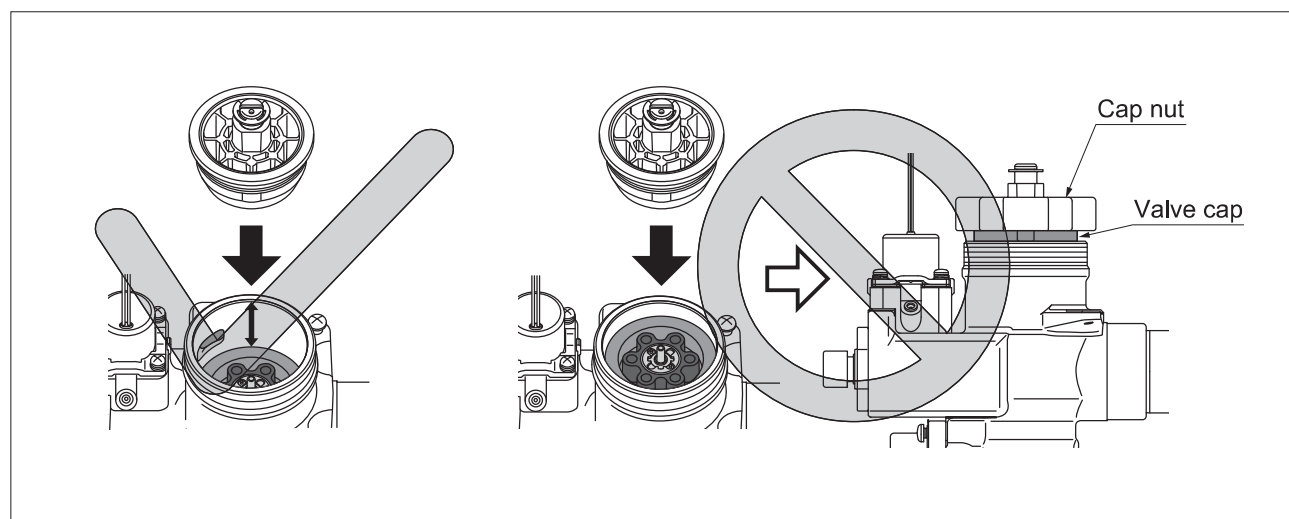
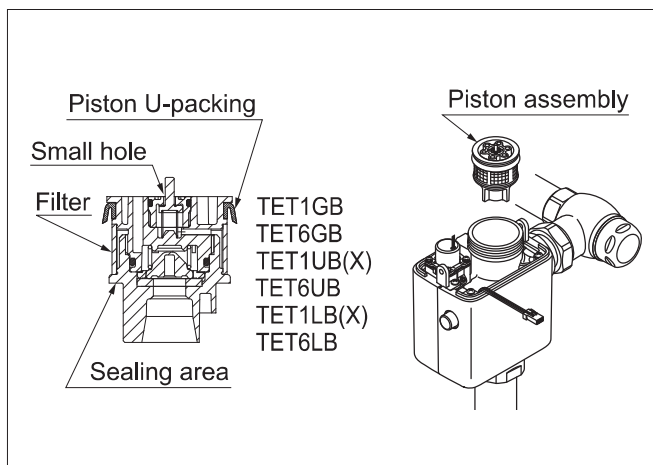
8. Check the filter to see if it is clogged with debris and gently brush it clean.

9. Check the sealing area of the piston and clean it if it is dirty.

10. Check the U-packing for cracks or damage.

11. Reassemble in reverse order.

NOTE: Please be sure to push the piston all the way down. The top of the piston should sit approximately 1-1/8" (28 mm) below the rim of the valve. Otherwise the valve cap will not assemble properly and there is a risk of leakage.



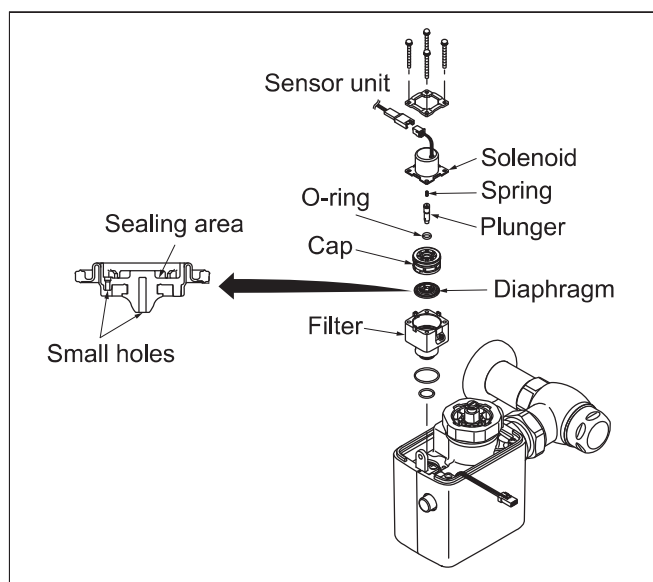
■ CLEANING DIAPHRAGM AND FILTER

1. Turn the screw on the control stop clockwise to turn off the water.
2. Remove the side screws from top cover using the tamper resistant hex wrench (provided).
3. Lift off top cover carefully, and disconnect the solenoid harness.
4. Remove the solenoid and take out the diaphragm. Then check the small holes and sealing area.

NOTE: See the illustration on the right for disassembly.

NOTE: Do not stretch or alter the shape of the spring in the solenoid valve in any way. It will void the warranty.

5. Check the filter to see if it is clogged with debris and gently brush it clean.
6. Reassemble in reverse order.



■ CHECKING THE SOLENOID

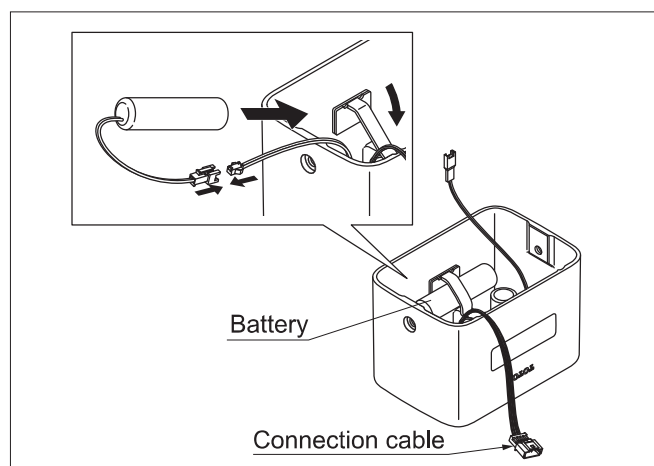
1. Make sure the batteries are properly placed and cables are connected.
2. With water supply turned off, place your hand in front of the sensor for 6 seconds.
3. Remove and listen for a “click” sound after 3 seconds. This indicates the solenoid plunger has been activated.

■ BATTERY REPLACEMENT

A special lithium back-up battery is used. Replace only with the battery provided by TOTO.

If a red light in the sensor window blinks with the cycle of 4 seconds, it is time to replace the battery.

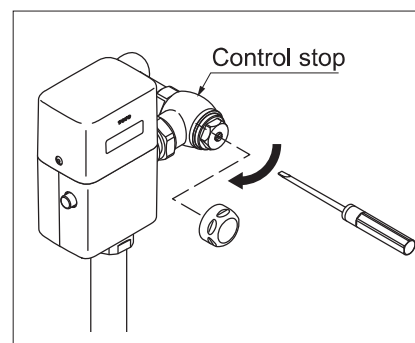
1. Remove the old battery.
2. Set the new battery at the proper position.



■ ADJUSTMENT OF THE FLOW RATE

1. Adjust the flow rate by the turning screw on the control stop.
2. Turn the screw clockwise to decrease the flow rate and turn the screw counter-clockwise to increase.

NOTE: Adjust so water amount is not excessive and waste can flow properly.



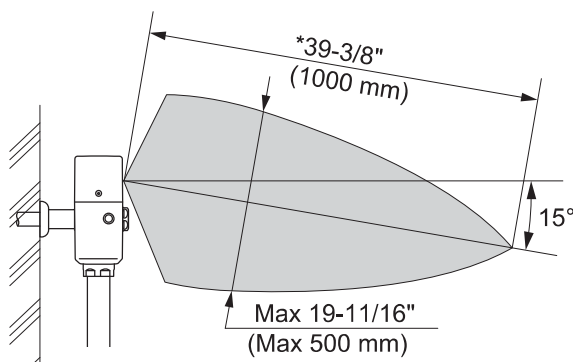
■ DETECTION RANGE

The detection range of the infrared sensor is set at the factory and does not need further adjustment.

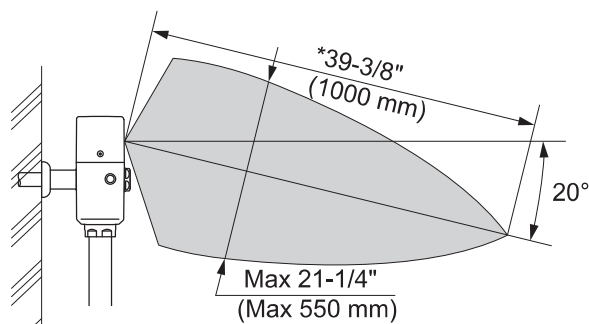
*Measure on a 300mm x 300mm square white board.

*The Detection Range diagram below is for illustrative purposes.

TET1GB, TET1LB(X), TET1UB(X)



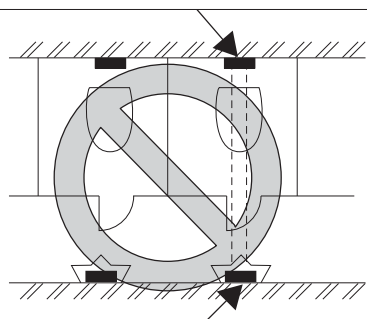
TET6LB, TET6UB, TET6GB



PRECAUTION

DO NOT place the infrared sensor of one flush valve in line with sensor of another Flush Valve.

Another infrared sensor.

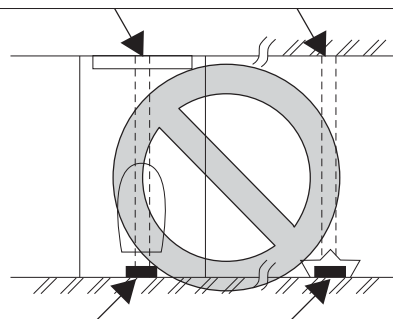


Infrared sensor of the automatic Flush Valve.

PRECAUTION

DO NOT place the infrared sensor in front of a mirror, stainless steel wall, or other highly reflective surface.

Mirror, stainless steel wall or other highly reflective surface.



Infrared sensor of the automatic Flush Valve.

NOTE: In some cases, the valve may not detect a user if the toilet seat is left in an upright position. This can be caused by the rough-in dimension or gap of the open front commercial seat. Please lower the seat or contact a plumbing contractor to change the height of the valve.

The sensor can have trouble detecting users wearing black clothes in some conditions.

